National Trends in Osteomyelitis-Associated Mortality in the United States, 1999-2023

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Introduction

- Osteomyelitis is a serious infection linked to prolonged hospitalizations, amputations, and high mortality in vulnerable groups.
- Despite clinical advances, national trends in osteomyelitis mortality remain poorly characterized.
- We aimed to describe population-level mortality patterns associated with osteomyelitis in the United States from 1999–2023.

Methods

- Retrospective, population-based analysis of CDC WONDER Multiple Cause of Death database, all United States deaths (1999- 2023).
- Death certificates with osteomyelitis (M86) as an underlying or contributing cause were identified.
- Log-linear regression models to estimate the annual percent change (APC) in age-adjusted mortality rates (AAMRs) with stratifications for demographic subgroups.

Results

- From 1999–2023, **55,976 deaths** listed osteomyelitis as the *underlying cause* and **131,490 deaths** listed it as a *contributing cause*.

Figure 1. Age-adjusted mortality rates over time for osteomyelitis by sex category.*

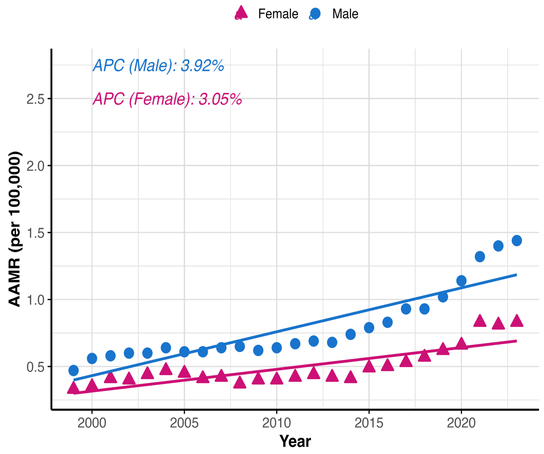

Figure 2. Age-adjusted mortality rates over time for osteomyelitis by racial/ethnic category.*

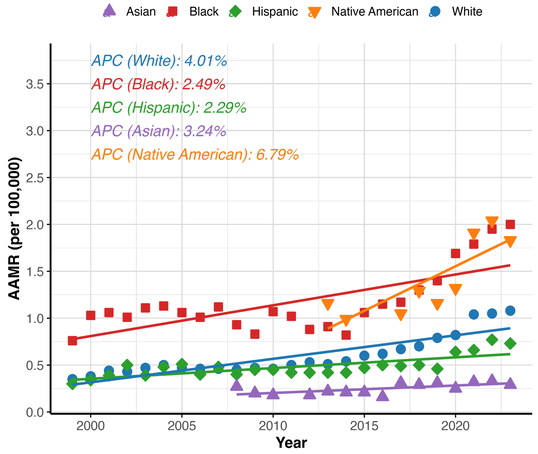

Table 1. Age-adjusted mortality rates and annual percent changes for osteomyelitis by demographic group and comorbidity.*

Group	1999 AAMR	1999 Deaths	2023 AAMR	2023 Deaths	APC (95% CI) (%)	p-value
Overall	0.38	1,068	1.11	4,677	3.54 (2.8, 4.28)	**<0.001**
Male	0.47	488	1.44	2,700	3.92 (3.23, 4.61)	**<0.001**
Female	0.33	580	0.83	1,977	3.05 (2.21, 3.89)	**<0.001**
NH White	0.35	831	1.08	3,381	4.01 (3.28, 4.75)	**<0.001**
NH Black	0.76	166	2	821	2.49 (1.37, 3.62)	**<0.001**
Hispanic	0.3	41	0.73	326	2.29 (1.45, 3.15)	**<0.001**
Asian or Pacific Islander	N/A	15	0.29	71	3.24 (0.85, 5.68)	0.11
American Indian/Alaska Native	N/A	11	1.83	47	6.79 (2.68, 11.08)	**0.005**
0-34	N/A	13	0.02	32	<0.001 (0, <0.001)	0.08
35-64	0.15	155	0.67	855	6.08 (5.47, 6.7)	**<0.001**
65+	2.61	907	6.4	3,789	2.9 (2.2, 3.6)	**<0.001**
Diabetes	0.28	771	0.83	3,532	4.04 (3.03, 5.07)	**<0.001**
Peripheral Vascular Disease	0.06	176	0.21	939	5.27 (4.19, 6.36)	**<0.001**
Trauma	0.02	55	0.06	281	6.85 (5.09, 8.64)	**<0.001**
Decubitus Ulcer	0.07	210	0.27	1,210	6.17 (5.32, 7.04)	**<0.001**

* All estimates and statistics are computed based on osteomyelitis as an underlying cause of death.

Results (cont.)

- Among underlying-cause deaths, **54.02%** were men and **74.28%** were non-Hispanic White.
- Most common comorbidities:
  - **Diabetes (29.64%)**
  - **Decubitus ulcers (9.48%)**
  - **Peripheral vascular disease (7.93%)**
  - **Trauma (2.66%)**
- **AAMR** increased from **0.38 per 100,000 (1999)** to **1.11 per 100,000 (2023)**
  - **APC:** 3.54% (95% CI: 2.8–4.28; $p < 0.001$)
- Most demographic subgroups showed significant increases in AAMR:
  - Both sexes
  - Non-Hispanic White, Non-Hispanic Black, and Hispanic populations
- **Asian and Pacific Islander** residents did **not** experience a significant increase.

Conclusions

- Osteomyelitis mortality rates have **steadily increased** over the past two decades.
- **Demographic disparities** persist across subgroups.
- Findings highlight the need for **improved prevention**, **earlier diagnosis**, and **targeted interventions** in **high-burden populations**.